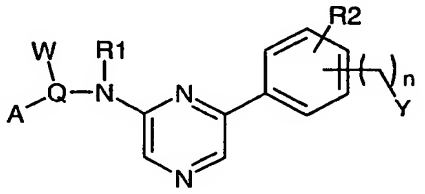
CLAIMS

1. A method of modulating microtubule polymerisation in a subject, said method comprising administering a therapeutically effective amount of at least one compound of the general formula (I)



I

or pharmaceutically acceptable prodrugs, salts, hydrates, solvates, crystal forms or diastereomers thereof, wherein:

R1 is H, C_{1-4} alkyl;

Q is a bond, or C_{1-4} alkyl;

A is aryl, hetaryl optionally substituted with 0-3 substituents independently chosen from halogen, C_{1-4} alkyl, CH_2F, CHF_2, CF_3, CN, aryl, hetaryl, OCF_3, OC_{1-4}alkyl, OC_{2-5}alkylNR4R5, Oaryl, Ohetaryl, CO_2R4, CONR4R5, nitro, NR4R5, C_{1-4} alkylNR4R5, NR6C_{1-4}alkylNR4R5, NR4COR5, NR6CONR4R5, NR4SO_2R5;

R4, R5 are each independently H, C_{1-4} alkyl, C_{1-4} alkyl cycloalkyl, C_{1-4} alkyl cyclohetalkyl, aryl, hetaryl, C_{1-4}alkyl aryl, C_{1-4} alkyl hetaryl, or may be joined to form an optionally substituted 3-8 membered ring optionally containing an atom selected from O, S, NR7;

R6 is selected from H, C_{1-4} alkyl;

R7 is selected from H, C_{1-4} alkyl, aryl, hetaryl, C_{1-4} alkyl aryl, C_{1-4} alkyl hetaryl;

R2 is 0-2 substituents independently selected from halogen, C_{1-4}alkyl, OH, OC_{1-4}alkyl, CH_2F, CHF_2, CF_3, OCF_3, CN, C_{1-4}alkylNR8R9, OC_{1-4}alkylNR8R9, CO_2R8, CONR8R9, NR8R9, NR8COR9, NR10CONR8R9, NR8SO_2R9;

R8, R9 are each independently H, C_{1-4} alkyl, C_{1-4} alkyl cycloalkyl, C_{1-4} alkyl cyclohetalkyl, aryl, hetaryl, C_{1-4} alkyl aryl, C_{1-4} alkyl hetaryl, or may be joined to form an optionally substituted 3-8 membered ring optionally containing an atom selected from O, S, NR11;

R10 is selected from H, C_{1-4} alkyl, aryl or hetaryl;

R11 is selected from H, C_{1-4} alkyl, aryl, hetaryl, C_{1-4} alkyl aryl, C_{1-4} alkyl hetaryl;

Y is halogen, OH, NR12R13, NR14COR12, NR14CONR12R13, $N14SO_2R13$;

R12 and R13 are each independently H, CH_2F, CHF_2, CF_3, CN, C_{1-4} alkyl optionally substituted with OH, OC_{1-4}alkyl or NR15R16, cycloalkyl; cyclohetalkyl, C_{1-4} alkyl cycloalkyl, C_{1-4} alkyl cyclohetalkyl, or may be joined to form an optionally substituted 3-6 membered ring optionally containing an atom selected from O, S, NR14

R14, R15 and R16 are each independently selected from H, C_{1-4} alkyl;

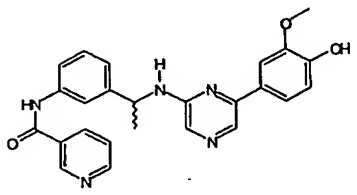
n = 0-4;

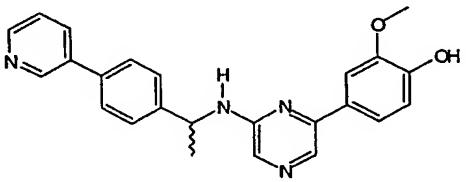
W is selected from H, C_{1-4}alkyl, C_{2-6}alkenyl; where C_{1-4}alkyl or C_{2-6}alkenyl may be optionally substituted with C_{1-4}alkyl, OH, OC_{1-4}alkyl, NR15R16;

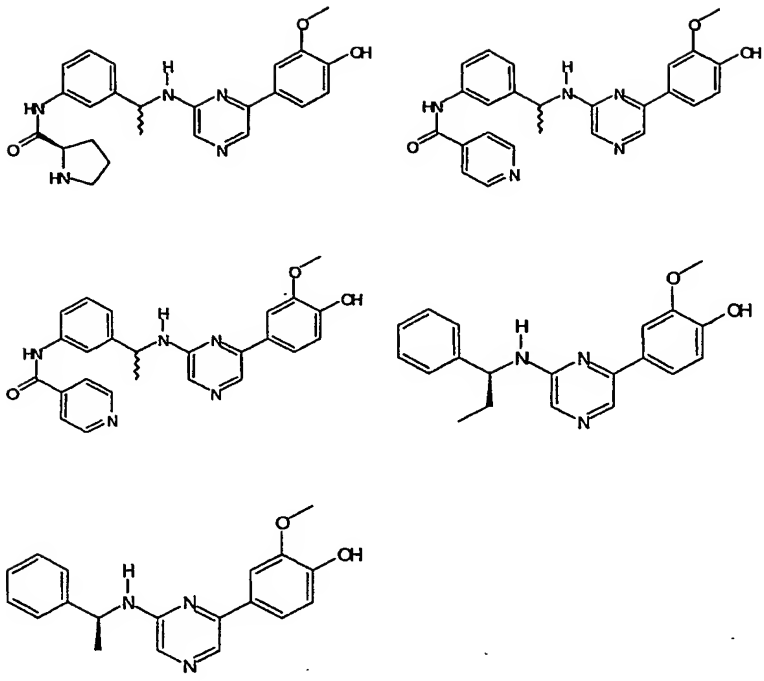
R15, and R16 are each independently H, C_{1-4} alkyl, C_{1-4} alkyl cycloalkyl, C_{1-4} alkyl cyclohetalkyl, or may be joined to form an optionally substituted 3-8 membered ring optionally containing an atom selected from O, S, NR17;

R17 is selected from H, C_{1-4} alkyl.

2. A method according to claim 1 wherein the compound is selected from the group consisting of:



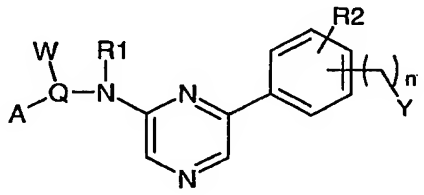




3. A method according to claim 1 or claim 2, wherein said method is used in the treatment of a hyperproliferation-related disorder or disease state.

4. A method according to claim 2, wherein the hyperproliferation-related disorder or disease state is selected from the group consisting of Cancer, infectious diseases, vascular restenosis and inflammatory diseases.

5. A compound of the general formula (II)



II

or pharmaceutically acceptable prodrugs, salts, hydrates, solvates, crystal forms or diastereomers thereof, wherein:

R1 is H, C_{1-4} alkyl;

Q is a bond, or C_{1-4} alkyl;

A is aryl, hetaryl optionally substituted with 0-3 substituents independently chosen from halogen, C_{1-4} alkyl, CH_2F, CHF_2, CF_3, CN, aryl, hetaryl, OCF_3, OC_{1-4}alkyl, OC_{2-5}alkylNR4R5, Oaryl, Ohetaryl, CO_2R4, CONR4R5, nitro, NR4R5, C_{1-4} alkylNR4R5, NR6C_{1-4}alkylNR4R5, NR4COR5, NR6CONR4R5, NR4SO_2R5;

R4, R5 are each independently H, C_{1-4} alkyl, C_{1-4} alkyl cycloalkyl, C_{1-4} alkyl cyclohetalkyl, aryl, hetaryl, C_{1-4}alkyl aryl, C_{1-4} alkyl hetaryl, or may be joined to form an optionally substituted 3-8 membered ring optionally containing an atom selected from O, S, NR7;

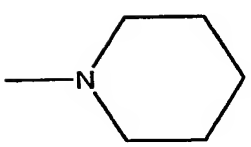
R6 is selected from H, C_{1-4} alkyl;

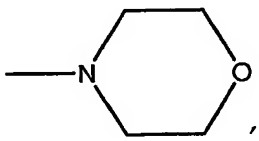
R7 is selected from H, C_{1-4} alkyl, aryl, hetaryl, C_{1-4} alkyl aryl, C_{1-4} alkyl hetaryl;

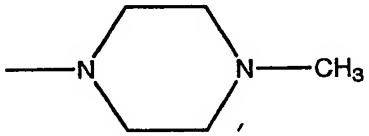
R2 is 0-2 substituents independently selected from C_{1-4}alkyl and OC_{1-4}alkyl;

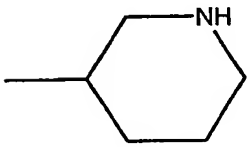
Y is CH_2OH, OC_{1-4}alkylOH, OC_{1-4}alkylR12, OC_{1-4}alkylNR12NR13, C(O)R12, CH_2R12, COOR12, CONR12R13, OCONR12R13, CH_2NR12R13, NHCOR12, NHCONR12R13,

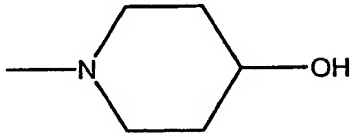
R12 and R13 are each independently H, C_{1-2} alkyl, $(CH_2)_3NEt_2$, $(CH_2)_2NMe_2$, $(CH_2)_5NH_2$, $(CH_2)_2OH$,

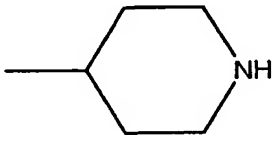


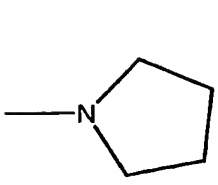








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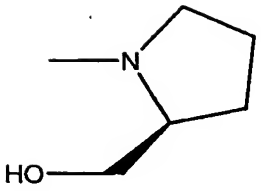
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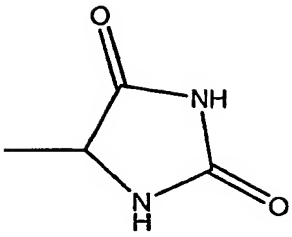
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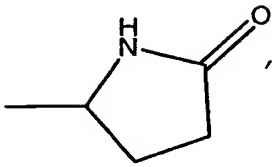
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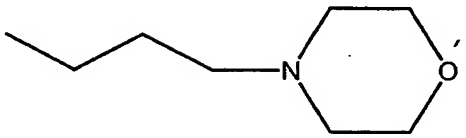
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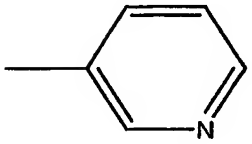
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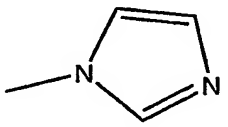

;

n = 0-4;

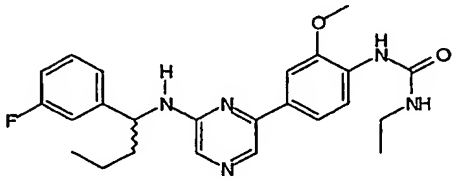
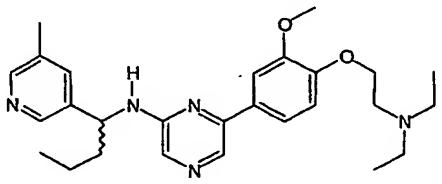
W is selected from H, C_{1-4}alkyl, C_{2-6}alkenyl; where C_{1-4}alkyl or C_{2-6}alkenyl may be optionally substituted with C_{1-4}alkyl, OH, OC_{1-4}alkyl, NR15R16;

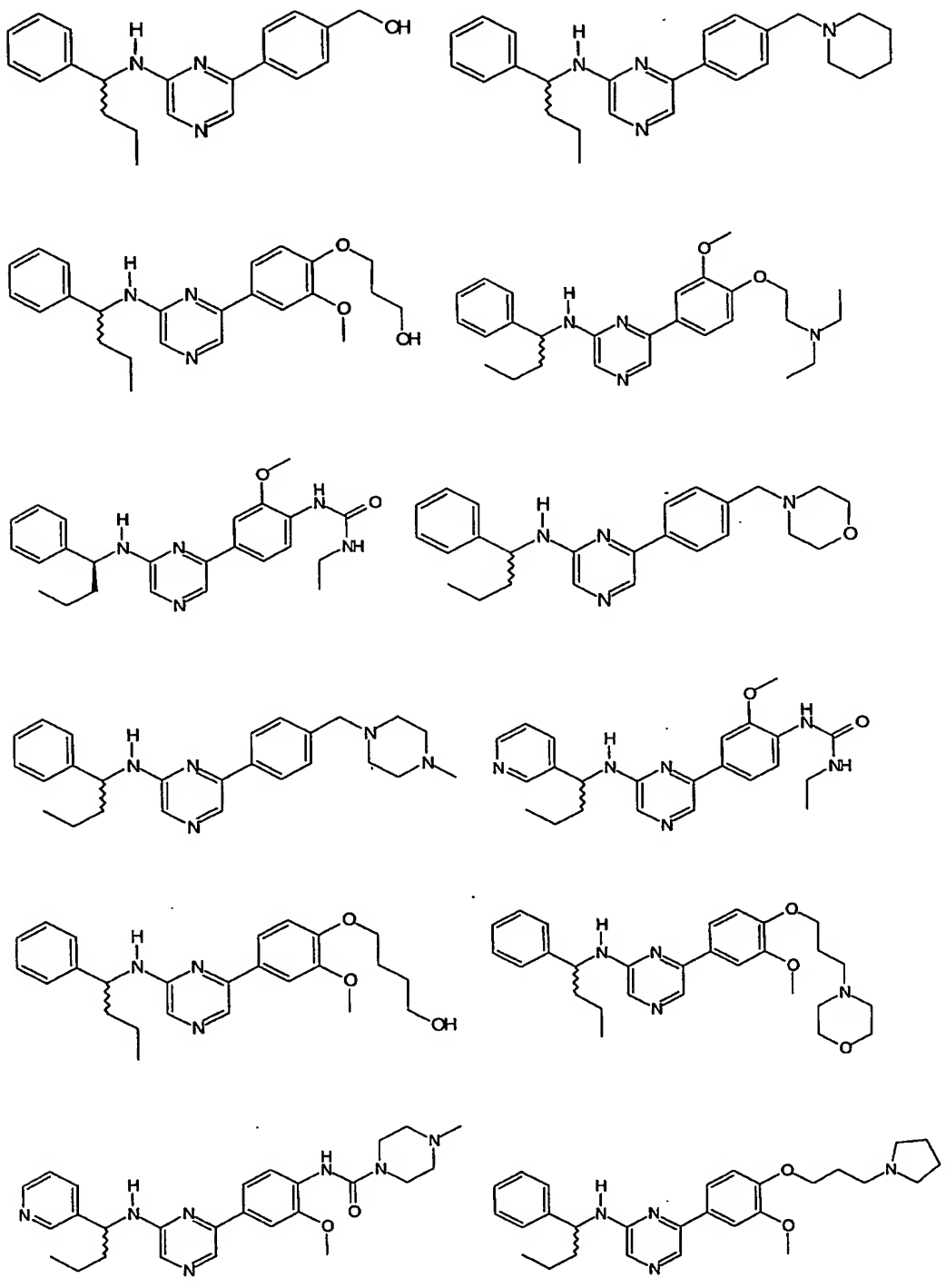
R15, and R16 are each independently H, C_{1-4} alkyl, C_{1-4} alkyl cycloalkyl, C_{1-4} alkyl cyclohetalkyl, or may be joined to form an optionally substituted 3-8 membered ring optionally containing an atom selected from O, S, NR17

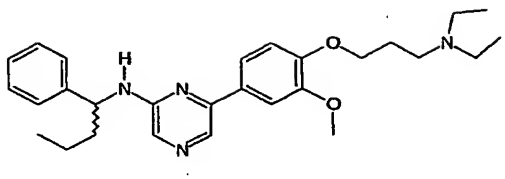
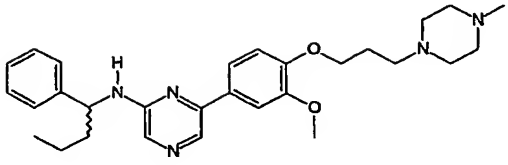
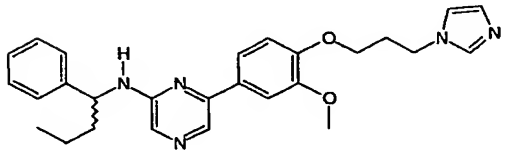
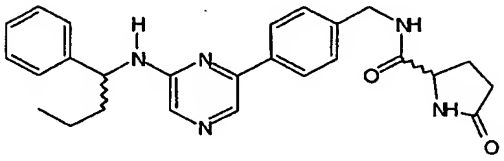
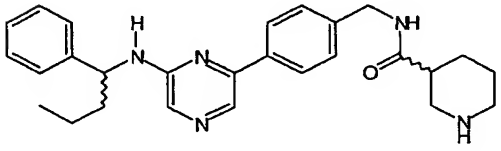
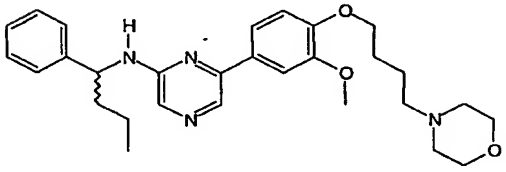
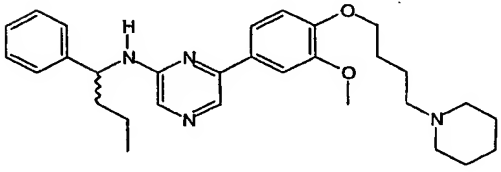
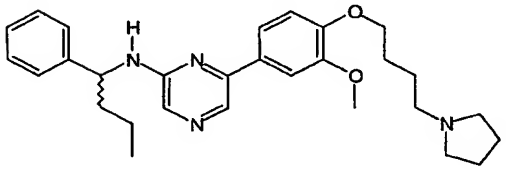
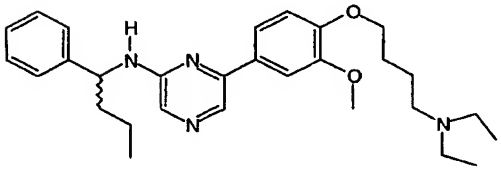
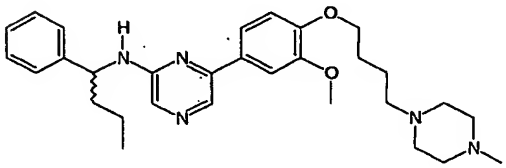
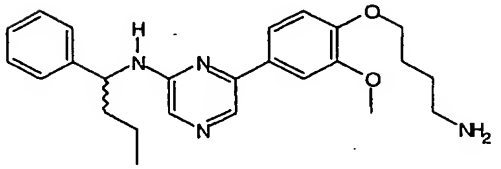
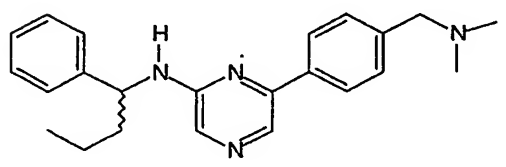
R17 is selected from H, C_{1-4} alkyl;

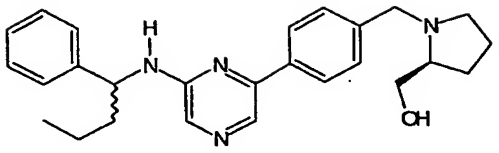
wherein when Y is CH_2R12 then R12 is not H, C_{1-2}alkyl.

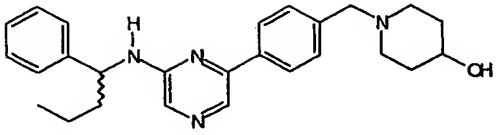
6. A compound according to claim 5 selected from the group consisting of:

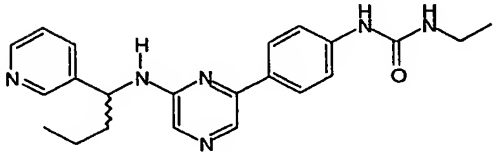



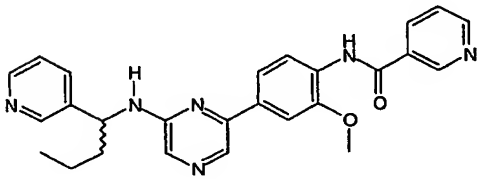


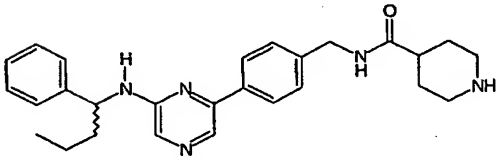













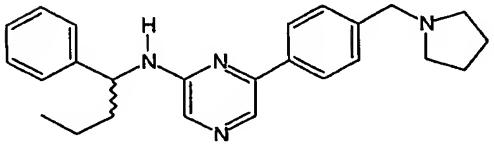


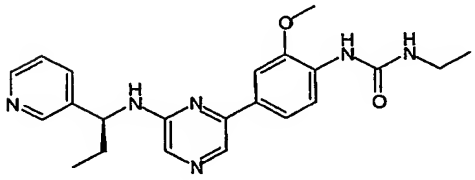


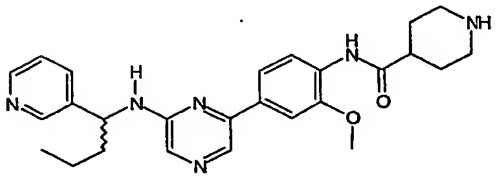


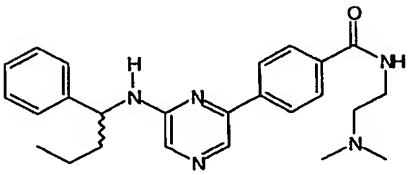


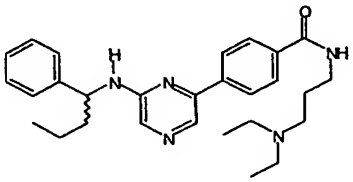


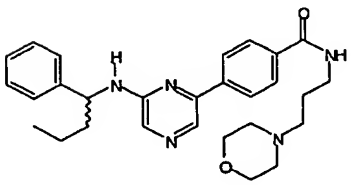


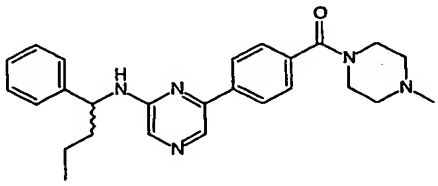


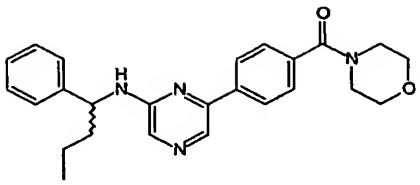


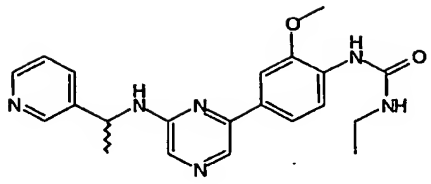


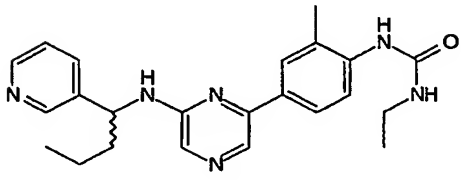


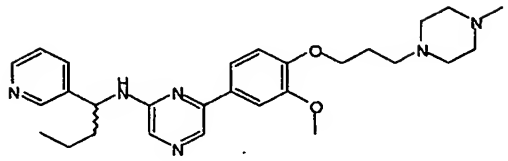


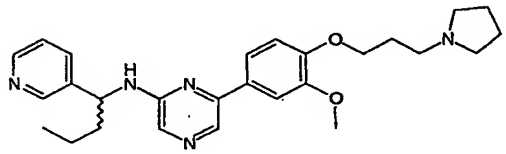


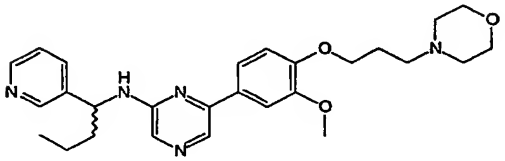


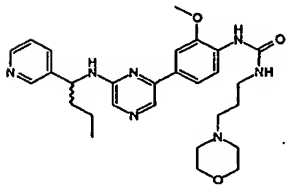


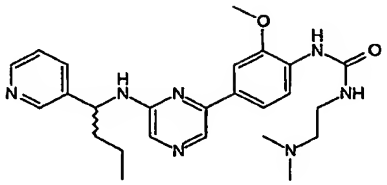


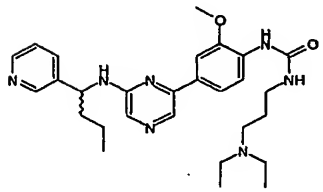


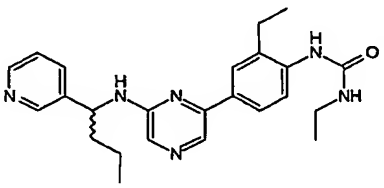


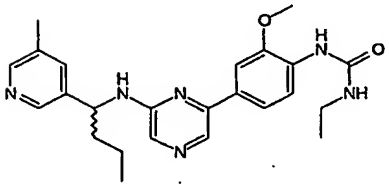


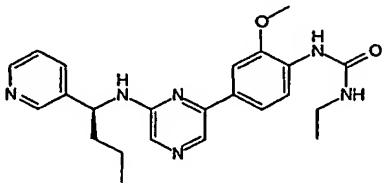


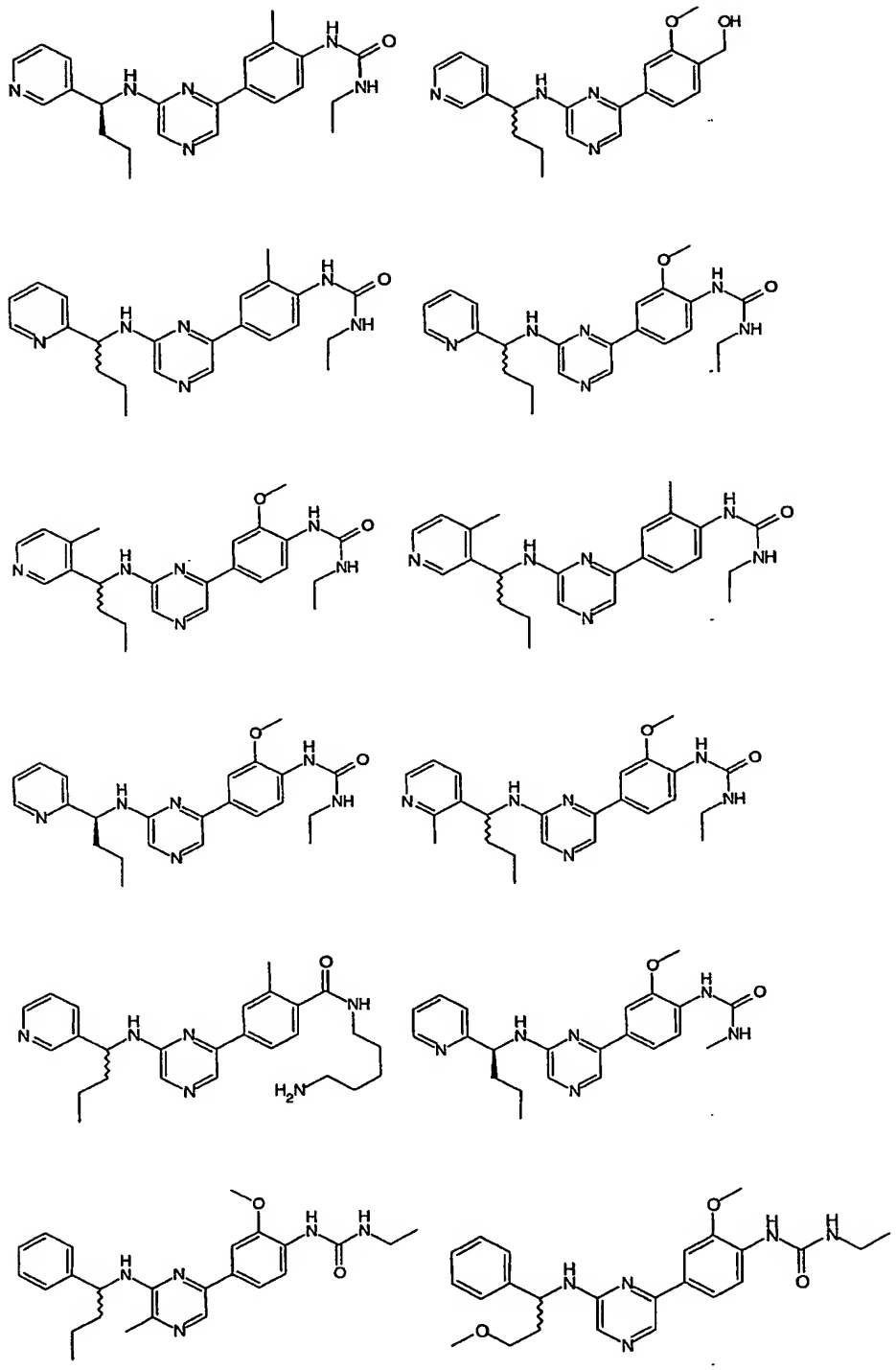


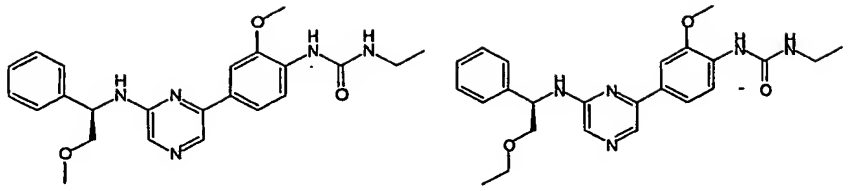




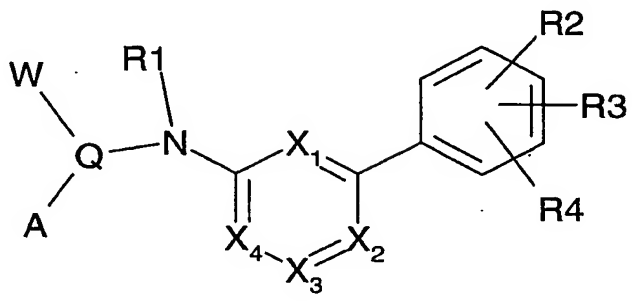








7. A compound of the general formula (III)



III

or pharmaceutically acceptable prodrugs, salts, hydrates, solvates, crystal forms or diastereomers thereof, wherein:

X_1, X_2, X_3, X_4 are selected from the following:

(i) X_1 and X_2 are N and X_3 and X_4 are C independently substituted with Y;

(ii) X_1 and X_4 are N and X_2 and X_3 are C independently substituted with Y;

(iii) X_1 and X_3 are N and X_2 and X_4 are C independently substituted with Y;

(iv) X_2 and X_4 are N and X_1 and X_3 are C independently substituted with Y;

(v) X_1 is N and X_2, X_3, and X_4 are C independently substituted with Y;

(vi) X_3 is N and X_1, X_2, and X_4 are C independently substituted with Y;

(vii) X_4 is N and X_1, X_2, and X_3 are C independently substituted with Y;

(viii) X_2 is N and X_1, X_3, and X_4 are C independently substituted with Y; and

(ix) X_1, X_2 and X_3 are N and X_4 is C substituted with Y;

R1 is H, C_{1-6}alkyl, C_{1-6} alkylNR5R6, C_{1-6}alkylNR5COR6, C_{1-6}alkylNR5SO_2R6, C_{1-6}alkylCO_2R5, C_{1-6}alkylCONR5R6, where R5 and R6 are each independently H, C_{1-4}alkyl, aryl, hetaryl, C_{1-4}alkylaryl, C_{1-4}alkylhetaryl or may be joined to form an optionally substituted 3-8 membered ring optionally containing an atom selected from O, S, NR7;

R7 is selected from H, C_{1-4}alkyl;

R2 is selected from C_{1-6}alkylOH, OC_{2-6}alkylOH, C_{1-6}alkylNR8R9, OC_{2-6}alkylNR8R9, C_{1-6}alkylNR8COR9, OC_{2-6}alkylNR8COR9, C_{1-6}alkylhetaryl, OC_{2-6}alkylhetaryl, OCONR8R9, NR8COOR9, NR10CONR8R9, CONR8R9, NR8COR12;

R8, R9 are each independently H, C_{1-4}alkyl, C_{1-4}alkylNR11R13, hetaryl, cyclohetalkyl, or may be joined to form an optionally substituted 3-8 membered ring optionally containing an atom selected from O, S, NR14;

R12 is C_{2-4}alkyl, C_{1-4}alkylNR11R13, hetaryl, cyclohetalkyl;

R11, R13 are each independently H, C_{1-4}alkyl, or may be joined to form an optionally substituted 3-8 membered ring optionally containing an atom selected from O, S, NR14;

R14 is selected from H, C_{1-4}alkyl;

R10 is H, C_{1-4} alkyl;

R3 and R4 are each independently H, halogen, C_{1-4}alkyl, OH, OC_{1-4}alkyl, CF_3, OCF_3;

Q is a bond, or C_{1-4} alkyl;

W is selected from H, C_{1-4}alkyl, C_{2-6}alkenyl; where C_{1-4}alkyl or C_{2-6}alkenyl may be optionally substituted with C_{1-4}alkyl, OH, OC_{1-4}alkyl, NR15R16;

R15, and R16 are each independently H, C_{1-4}alkyl, C_{1-4}alkyl cycloalkyl, C_{1-4}alkyl cyclohetalkyl, aryl, hetaryl, or may be joined to form an optionally substituted 3-8 membered ring optionally containing an atom selected from O, S, NR17;

R17 is selected from H, C_{1-4}alkyl;

A is aryl, hetaryl optionally substituted with 0-3 substituents independently chosen from halogen, C_{1-4} alkyl, CF_3, aryl, hetaryl, OCF_3, OC_{1-4}alkyl, OC_{2-5}alkylNR18R19, Oaryl, Ohetaryl, CO_2R18, CONR18R19, NR18R19, C_{1-4} alkylNR18R19, NR20C_{1-4}alkylNR18R19, NR18COR19, NR20CONR18R19, NR18SO_2R19;

R18, R19 are each independently H, C_{1-4} alkyl, C_{1-4} alkyl cyclohetalkyl, aryl, hetaryl, C_{1-4}alkyl aryl, C_{1-4} alkyl hetaryl, or may be joined to form an optionally substituted 3-8 membered ring optionally containing an atom selected from O, S, NR21;

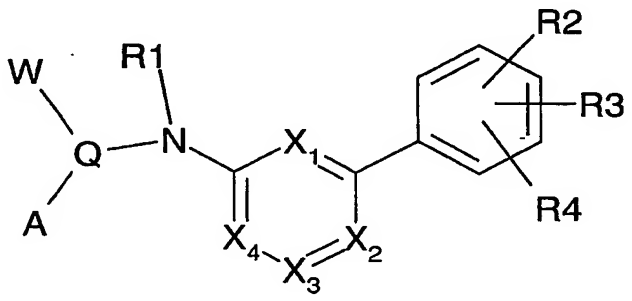
R21 is selected from H, C_{1-4}alkyl;

R20 is selected from H, C_{1-4}alkyl;

Y is selected from H, C_{1-4}alkyl, OH, NR22R23;

R22, R23 are each independently H, C_{1-4}alkyl.

8. A compound according to formula (III) of claim 7, wherein the compound is of the general formula (IV)



IV

or pharmaceutically acceptable prodrugs, salts, hydrates, solvates, crystal forms or diastereomers thereof, wherein:

X_1, X_2, X_3, X_4 are selected from the following:

(i) X_1 and X_2 are N and X_3 and X_4 are C independently substituted with Y;

(ii) X_1 and X_4 are N and X_2 and X_3 are C independently substituted with Y;

(iii) X_1 and X_3 are N and X_2 and X_4 are C independently substituted with Y;

(iv) X_2 and X_4 are N and X_1 and X_3 are C independently substituted with Y;

(v) X_1 is N and X_2, X_3, and X_4 are C independently substituted with Y;

(vi) X_3 is N and X_1, X_2, and X_4 are C independently substituted with Y;

(vii) X_4 is N and X_1, X_2, and X_3 are C independently substituted with Y;

(viii) X_2 is N and X_1, X_3, and X_4 are C independently substituted with Y; and

(ix) X_1, X_2 and X_3 are N and X_4 is C substituted with Y;

R1 is H, C_{1-6}alkyl, C_{1-6} alkylNR5R6, where R5 and R6 are each independently H, C_{1-4}alkyl, aryl, hetaryl, or may be joined to form an optionally substituted 3-8 membered ring optionally containing an atom selected from O, S, NR7;

R7 is selected from H, C_{1-4} alkyl;

R2 is selected from C_{1-6}alkylOH, OC_{2-6}alkylOH, C_{1-6}alkylNR8R9, OC_{2-6}alkylNR8R9, C_{1-6}alkylNR8COR9, OC_{2-6}alkylNR8COR9, C_{1-6}alkylhetaryl, OC_{2-6}alkylhetaryl, OCONR8R9, NR8COOR9, NR10CONR8R9, CONR8R9, NR8COR12;

R8, R9 are each independently H, C_{1-4}alkyl, C_{1-4}alkylNR11R13, hetaryl, cyclohetalkyl, or may be joined to form an optionally substituted 3-8 membered ring optionally containing an atom selected from O, S, NR14;

R12 is C_{2-4}alkyl, C_{1-4}alkylNR11R13, hetaryl, cyclohetalkyl;

R11, R13 are each independently H, C_{1-4}alkyl, or may be joined to form an optionally substituted 3-8 membered ring optionally containing an atom selected from O, S, NR14;

R14 is selected from H, C_{1-4}alkyl;

R10 is H, C_{1-4}alkyl;

R3 and R4 are each independently H, halogen, C_{1-4}alkyl, OH, OC_{1-4}alkyl, CF_3, OCF_3;

Q is CH;

W is selected from C_{1-4}alkyl, C_{2-6}alkenyl; where C_{1-4}alkyl or C_{2-6}alkenyl may be optionally substituted with C_{1-4}alkyl, OH, OC_{1-4}alkyl, NR15R16;

R15, and R16 are each independently H, C_{1-4}alkyl, or may be joined to form an optionally substituted 3-8 membered ring optionally containing an atom selected from O, S, NR17;

R17 is selected from H, C_{1-4}alkyl;

A is aryl, hetaryl optionally substituted with 0-2 substituents independently chosen from halogen, C_{1-4} alkyl, CF_3, aryl, hetaryl, OCF_3, OC_{1-4}alkyl, OC_{2-5}alkylNR18R19, Oaryl, Ohetaryl, CO_2R18, CONR18R19, NR18R19, C_{1-4} alkylNR18R19, NR20C_{1-4}alkylNR18R19, NR18COR19, NR20CONR18R19, NR18SO_2R19;

R18, R19 are each independently H, C_{1-4}alkyl, C_{1-4}alkyl cyclohetalkyl, aryl, hetaryl, C_{1-4}alkyl aryl, C_{1-4}alkyl hetaryl, or may be joined to form an optionally substituted 3-8 membered ring optionally containing an atom selected from O, S, NR21;

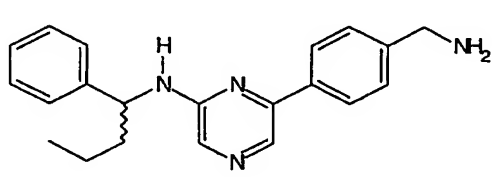
R21 is selected from H, C_{1-4}alkyl;

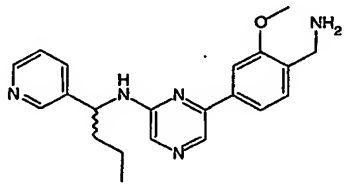
R20 is selected from H, C_{1-4}alkyl;

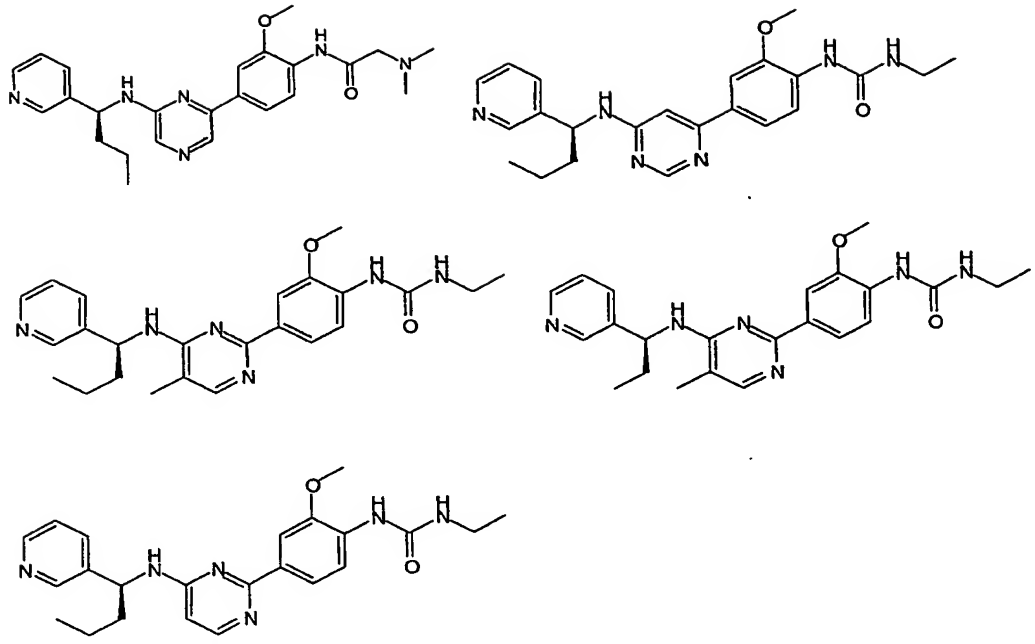
Y is selected from H, C_{1-4}alkyl, NR22R23;

R22, R23 are each independently H, C_{1-4}alkyl.

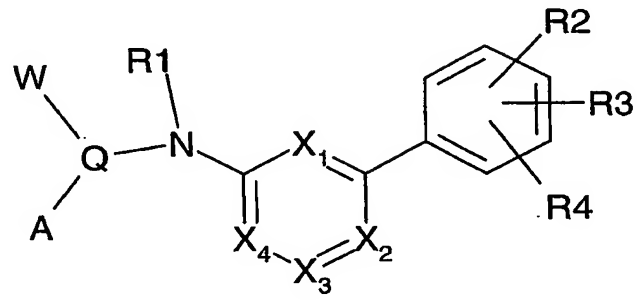
9. A compound according to claim 7 wherein the compound is selected from the group consisting of:







10. A compound of the general formula (V)



V

or pharmaceutically acceptable prodrugs, salts, hydrates, solvates, crystal forms or diastereomers thereof, wherein:

X_1, X_2, X_3, X_4 are selected from the following:

(i) X_1 and X_2 are N and X_3 and X_4 are C independently substituted with Y;

(ii) X_1 and X_4 are N and X_2 and X_3 are C independently substituted with Y;

(iii) X_2 and X_4 are N and X_1 and X_3 are C independently substituted with Y;

(iv) X_1 is N and X_2, X_3, and X_4 are C independently substituted with Y;

(v) X_3 is N and X_1, X_2, and X_4 are C independently substituted with Y;

(vi) X_4 is N and X_1, X_2, and X_3 are C independently substituted with Y;

(vii) X_2 is N and X_1, X_3, and X_4 are C independently substituted with Y; and

(viii) X_1, X_2 and X_3 are N and X_4 is C substituted with Y;

R1 is H, C_{1-6}alkyl, C_{1-6} alkylNR5R6, C_{1-6}alkylNR5COR6, C_{1-6}alkylNR5SO_2R6, C_{1-6}alkylCO_2R5, C_{1-6}alkylCONR5R6, where R5 and R6 are each independently H, C_{1-4}alkyl, aryl, hetaryl, C_{1-4}alkylaryl, C_{1-4}alkylhetaryl or may be joined to form an optionally substituted 3-8 membered ring optionally containing an atom selected from O, S, NR7;

R7 is selected from H, C_{1-4} alkyl;

R2 is selected from OH, OC_{1-6}alkyl, C_{1-6}alkylOH, OC_{2-6}alkylOH, C_{1-6}alkylNR8R9, OC_{2-6}alkylNR8R9, C_{1-6}alkylNR8COR9, OC_{2-6}alkylNR8COR9, C_{1-6}alkylhetaryl, OC_{2-6}alkylhetaryl, OCONR8R9, NR8COOR9, NR10CONR8R9, CONR8R9, NR8COR12;

R8, R9 are each independently H, C_{1-4}alkyl, C_{1-4}alkylNR11R13, hetaryl, cyclohetalkyl, or may be joined to form an optionally substituted 3-8 membered ring optionally containing an atom selected from O, S, NR14;

R12 is C_{2-4}alkyl, C_{1-4}alkylNR11R13, hetaryl, cyclohetalkyl;

R11, R13 are each independently H, C_{1-4}alkyl, or may be joined to form an optionally substituted 3-8 membered ring optionally containing an atom selected from O, S, NR14;

R14 is selected from H, C_{1-4}alkyl;

R10 is H, C_{1-4} alkyl;

R3 and R4 are each independently H, halogen, C_{1-4}alkyl, OH, OC_{1-4}alkyl, CF_3, OCF_3;

Q is a bond, or C_{1-4}alkyl;

W is selected from H, C_{1-4}alkyl, C_{2-6}alkenyl; where C_{1-4}alkyl or C_{2-6}alkenyl may be optionally substituted with C_{1-4}alkyl, OH, OC_{1-4}alkyl, NR15R16;

R15, and R16 are each independently H, C_{1-4}alkyl, C_{1-4}alkyl cycloalkyl, C_{1-4}alkyl cyclohetalkyl, aryl, hetaryl, or may be joined to form an optionally substituted 3-8 membered ring optionally containing an atom selected from O, S, NR17;

R17 is selected from H, C_{1-4}alkyl;

A is aryl, hetaryl optionally substituted with 0-3 substituents independently chosen from halogen, C_{1-4} alkyl, CF_3, aryl, hetaryl, OCF_3, OC_{1-4}alkyl, OC_{2-5}alkylNR18R19, Oaryl, Ohetaryl, CO_2R18, CONR18R19, NR18R19, C_{1-4} alkylNR18R19, NR20C_{1-4}alkylNR18R19, NR18COR19, NR20CONR18R19, NR18SO_2R19;

R18, R19 are each independently H, C_{1-4} alkyl, C_{1-4} alkyl cyclohetalkyl, aryl, hetaryl, C_{1-4}alkyl aryl, C_{1-4} alkyl hetaryl, or may be joined to form an optionally substituted 3-8 membered ring optionally containing an atom selected from O, S, NR21;

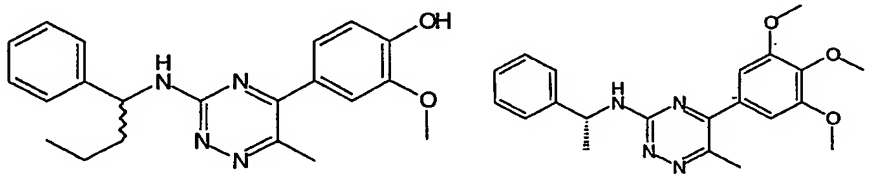
R21 is selected from H, C_{1-4} alkyl;

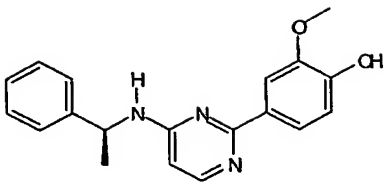
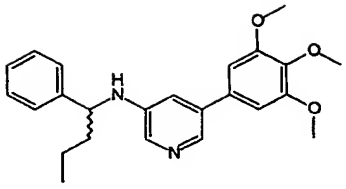
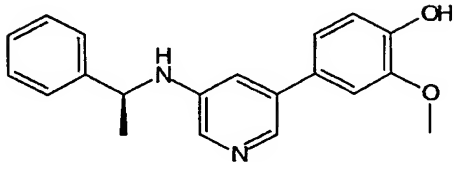
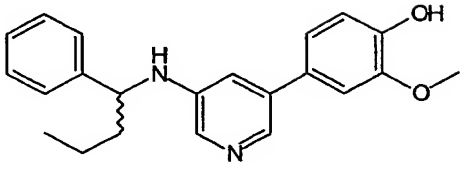
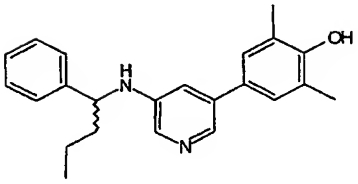
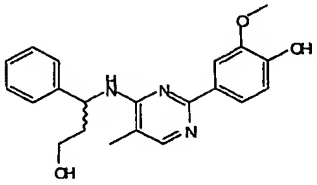
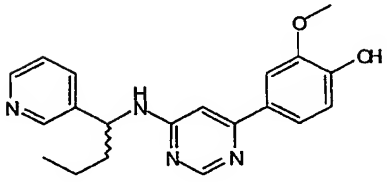
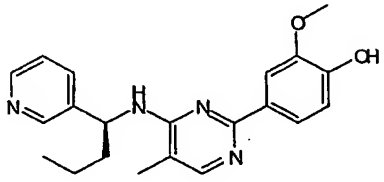
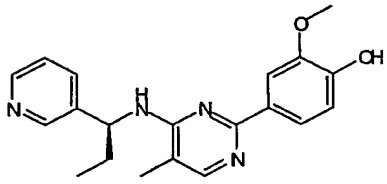
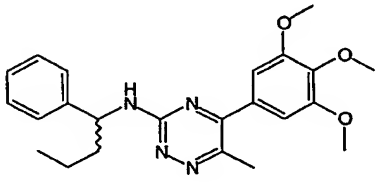
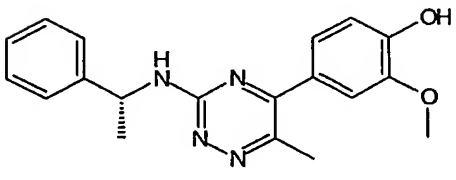
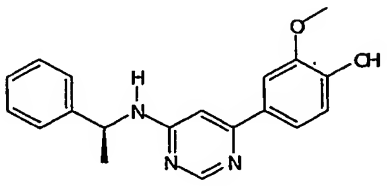
R20 is selected from H, C_{1-4} alkyl;

Y is selected from H, C_{1-4}alkyl, OH, NR22R23;

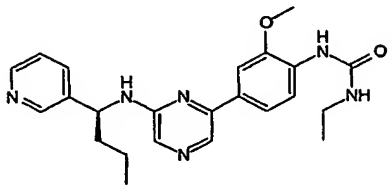
R22, R23 are each independently H, C_{1-4} alkyl.

11. A compound according to claim 10 selected from the group consisting of:



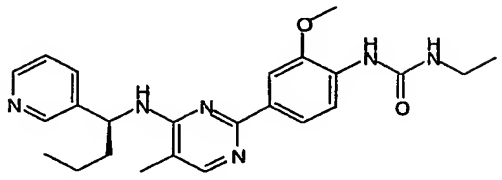













12. A compound of the formula:



or a pharmaceutically acceptable prodrug, salt, hydrate, solvate, crystal form or a diastereomer thereof

13. A compound of the formula:



or a pharmaceutically acceptable prodrug, salt, hydrate, solvate, crystal form or a diastereomer thereof

14. A composition comprising a carrier and at least one compound according to any one of claims 5 to 13.

15. A method of treatment of a hyperproliferation-related disorder or disease state in a subject, said method comprising administering a therapeutically effective amount of at least one compound according to any one claims 1 to 13 or a composition according to 14.

16. A method of treatment according to claim 15, wherein the hyperproliferation-related disorder or disease state is treatable by the modulation of microtubule polymerisation.

17. A method according to claim 15 or claim 16, wherein the hyperproliferation-related disorder or disease state is selected from the group consisting of Cancer, infectious diseases, vascular restenosis or inflammatory diseases.

18. A method of treatment of a protein-kinase related disorder or disease state in a subject, said method comprising administering a therapeutically effective amount of at least one compound according to any one of claims 1 to 13 or a composition according to 14.

17. A method according to claim 18, wherein the protein-kinase related disorder or disease state is selected from the group consisting of Atopy, Cell Mediated Hypersensitivity, Rheumatic Diseases, Other autoimmune diseases and Viral Diseases.

18. A method of treatment of diseases and conditions associated with inflammation and infection in a subject, said method comprising administering a therapeutically effective amount of at least one compound according to any one of claims 1 to 13 or a composition according to claim 14.